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September 21, 1970



World Feedgrain Trade

India's Package Program

Foreign
Agricultural
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U.S. DEPARTMENT
OF AGRICULTURE

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This week's cover:

A rice field in Uttar Pradesh, India, is irrigated by an age-old method—a water wheel driven by draft animals. (Photo courtesy FAO.)

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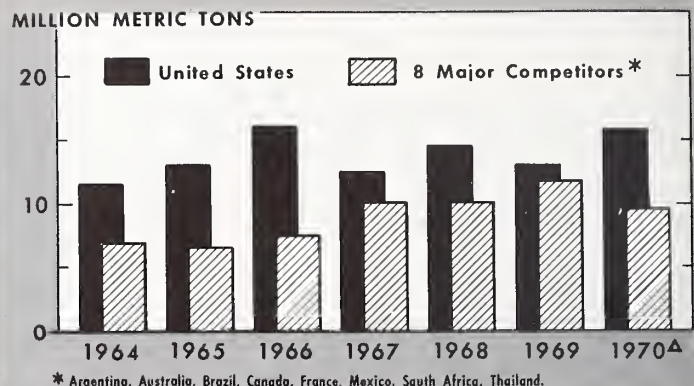
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TRENDS IN FEEDGRAIN EXPORT

Corn



Import Changes in World's 1969-70

By LARRY F. THOMASSON
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Two changes in demand dominated the world feedgrain export picture in fiscal 1970: Japan's imports rose about 1.5 million metric tons, and those of the European Community fell about 1.2 million. Purchases by these big buyers and a number of smaller ones helped the world feedgrain export total reach an estimated 41.6 million tons, for a moderate gain of about 2 million over last year's reduced level and an equally moderate decline from the record exports of more than 43 million tons in 1966 and 1967.

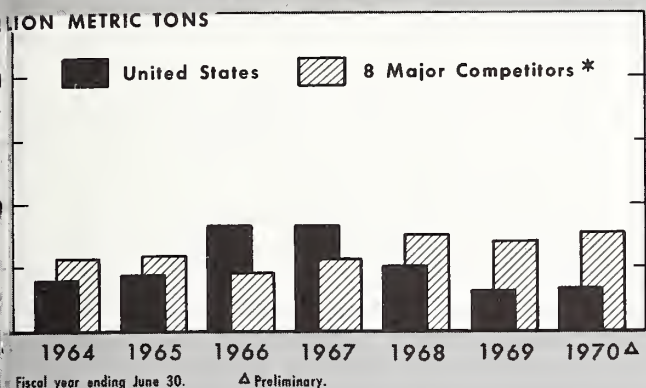
The two major demand changes came close to offsetting each other. Thus, the bulk of the 2-million-ton export increase is to be found elsewhere. About 800,000 tons of it can be attributed primarily to increased takings by the United Kingdom (barley), Israel, Poland, Greece, and Portugal. But about half of it comes from trade shifts covering shortfalls by some traditional feedgrain suppliers, rather than from growth in world demand.

Of these shifts, slightly over 500,000 tons were accounted for by South Africa's imports of Rhodesian corn, which permitted South Africa to continue as a sizable exporter despite massive drought losses in the previous growing season. About another 500,000 were due to Mexico's switch from being an exporter of corn to being a net importer. This too was brought about by a prolonged drought leading to a reduced harvest the year before.

Japan's feedgrain imports jumped by 1.5 million tons or nearly one-fifth in fiscal 1970, to exceed 10 million tons—a phenomenal figure for one country. In fact, it is nearly double

MAJOR WORLD SUPPLIERS

Sorghum, Barley, Oats



EC & Japan Mark Feedgrain Trade

Japan's growth trend of about 800,000 tons per year, on the average, since 1960.

Corn was the major component of the total at 6 million tons, for a gain of 700,000 over last year. The United States supplied 4.5 million tons, about 2 million more than the year before when the U.S. share was reduced.

Sorghums accounted for another 3.2 million tons of the Japanese total, of which 1.9 million came from the United States. Increases of 64,000 tons for barley and 57,000 tons for oats were also recorded.

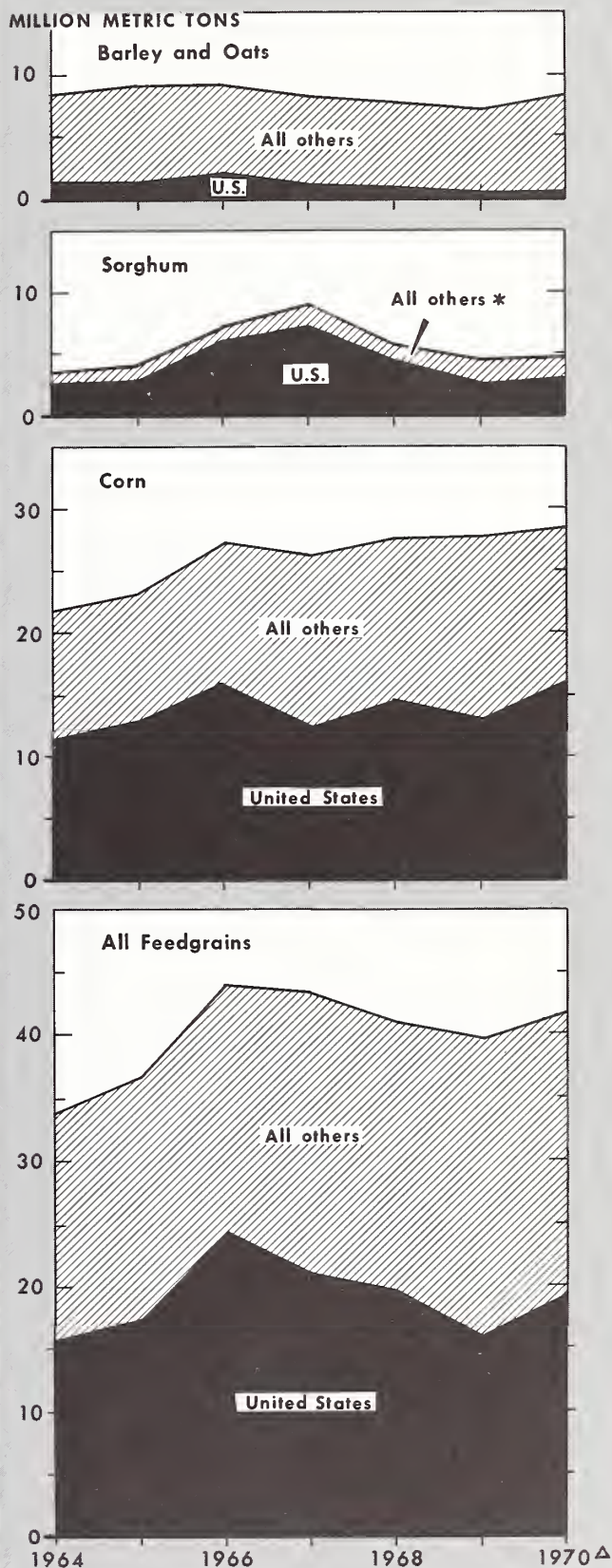
Net EC feedgrain imports continued the downward spiral that started in 1966, and at about 6.2 million tons reached the lowest level in 14 years (since 1957).

Preliminary data for fiscal 1970 show EC feedgrain imports down by around 1.2 million tons while exports were up by about 700,000. Interestingly enough, the export increase is mainly barley from West Germany and corn from the Netherlands. Part of this is undoubtedly transshipments; another portion probably represents feedgrain freed for export by the ready availability of abundant feed wheat, much of it at subsidized prices. But whatever the reasons, it is clear that the Common Market, behind a system of import protection and high internal support prices, is becoming a diminishing market for the world's more efficient producers of feedgrains.

U.S. exports recoup

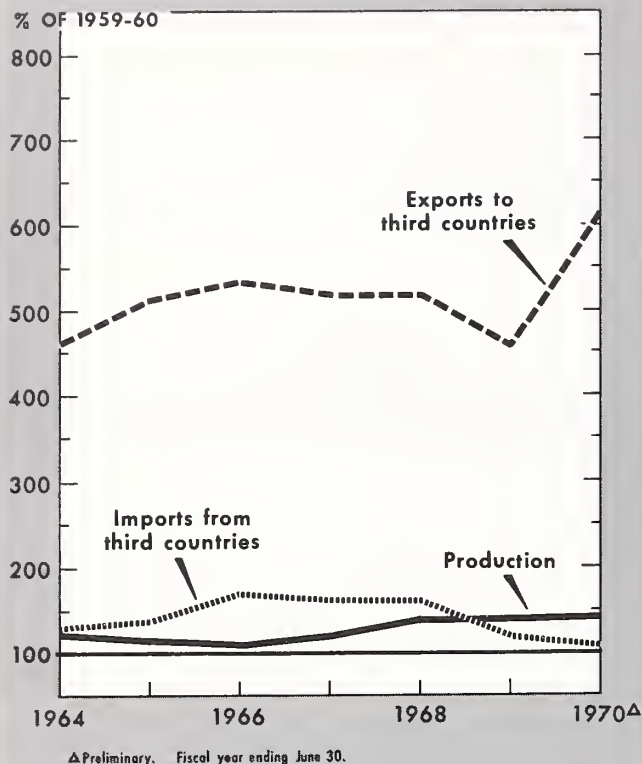
Total U.S. exports (excluding products) rose nearly 3.2 million tons and reached about 19.2 million for a 46-percent share of world trade. Although satisfying, this gain hardly recovered the ground lost to our major competitors the year before when U.S. exports dropped to a low of 40 percent of the world total. Throughout the decade of the 1960's they had never been lower than 46 percent, and they had reached a

TRENDS IN U.S. AND WORLD EXPORTS OF MAJOR FEEDGRAINS

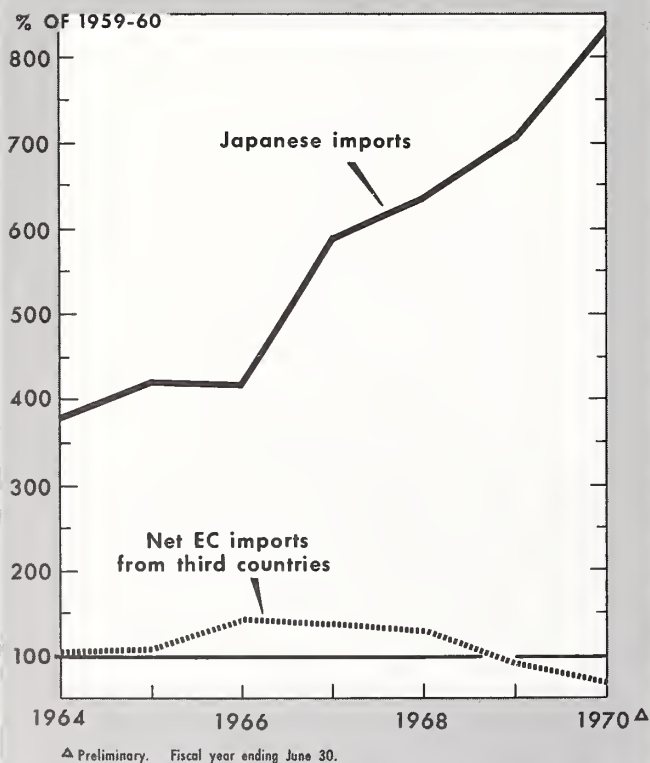


* Principal exporters—Argentina, S. Africa, Australia, Thailand.
Δ Preliminary. Fiscal year ending June 30.

TRENDS IN EC COARSE GRAINS PRODUCTION AND EXTERIOR TRADE



TRENDS IN COARSE GRAIN IMPORTS OF THE EC AND JAPAN



high of 55 percent in the record breaking year 1966.

Corn was the big gainer for the United States, with exports increased by nearly 2.9 million tons to 15.8 million for the fiscal year. In fact, they were second only to the record of 16 million set in fiscal 1966.

Sorghums registered a gain of 300,000 tons that placed the total for that grain slightly over the 3-million-ton mark for the year. This was a welcome improvement, but still less than half the volume of either 1966 or 1967. Barley exports showed a small gain, which was, however, about canceled out by a continued decline in exports of oats.

The eight major U.S. competitors—Argentina, Australia, Brazil, Canada, France, Mexico, South Africa, and Thailand—suffered a combined net loss of around 1.6 million tons in their feedgrain exports for the fiscal year just ended. Practically all of this decline can be attributed to severe reductions in the harvests of South Africa, Mexico, and Brazil during the growing season of the year before.

Major competitors' corn exports down

Principal change in the competitors' performance was a decrease of about 2.2 million tons in corn exports; shipments of sorghums and oats also were apparently down by small amounts. These decreases were only partly compensated for by an increase of less than 800,000 tons for barley.

Information available on corn exports indicates declines for South Africa (1.1 million tons), Mexico (850,000), and Brazil (500,000). Increases of about 200,000 and 400,000 tons, respectively, were noted for Thailand and Argentina.

For sorghums, an increase of about 200,000 tons for Argentina was apparently offset by a decline for South Africa. Barley had only one outstanding performer in this group—Canada, which increased exports by 800,000—while Argentina dropped by 170,000. Australia and Argentina accounted for the group's decline in oats.

The remaining exporting countries (minus the United States and the eight top competitors) increased their shipments by about 600,000 tons in fiscal 1970. An increase of about 800,000 tons for barley was offset somewhat (200,000) by declines for oats, sorghums, and corn. In actuality, however, the increased barley "exports" were largely transshipments by West Germany, the Netherlands, and Belgium.

Corn, of course, continued as the dominant feedgrain moving in world trade last year. But corn and oats together lost 3 percentage points to barley in their relative share of world feedgrain trade, even as the total trade was increasing. Data available indicate a drop of 2 points to 68 percent of the total for corn last year, while barley moved from 16 to 19 percent. Sorghum held steady at 11 percent as oats slipped to only about 2 percent.

In absolute quantities, the changes in world feedgrain trade looked approximately like this:

	Fiscal 1969 Million tons	Fiscal 1970 Million tons
Corn	27.7	28.2
Sorghum	4.6	4.8
Barley	6.2	7.8
Oats	1.1	.8
Total	39.6	41.6

The United States accounted for more than half of the total corn exports and for nearly two-thirds of the sorghum exports. But its share of the barley was only 4 percent, and its share of the oats, only 3 percent.

Unlike other vegetable oils

Industrial Oils Lag on World Market

The main industrial vegetable oils—linseed, castor, tung, and oiticica—have not all shared in the growth that the 1960's brought to world fats and oils production and trade.

While total world exports of fats and oils rose by roughly 50 percent during the decade compared with the 1955-59 average, and total world production rose by 40 percent, both world exports and world production of the industrial oils as a group remained largely stagnant; world production averaged about 1.6 million short tons a year and exports around 740,000. And in both production and trade, this group has provided a declining share of the world totals.

Why has this happened? The answer is complex. The dominant member of the group—flaxseed, with the linseed oil it yields—has fared worst. In general, flaxseed production in the major exporting countries has been going up while the traditional uses of flaxseed and linseed oil in the major consuming countries have been going down. Castor oil, on the other hand, has enjoyed a rising trend in world production and trade; but tung oil and oiticica oil have remained relatively stagnant in both.

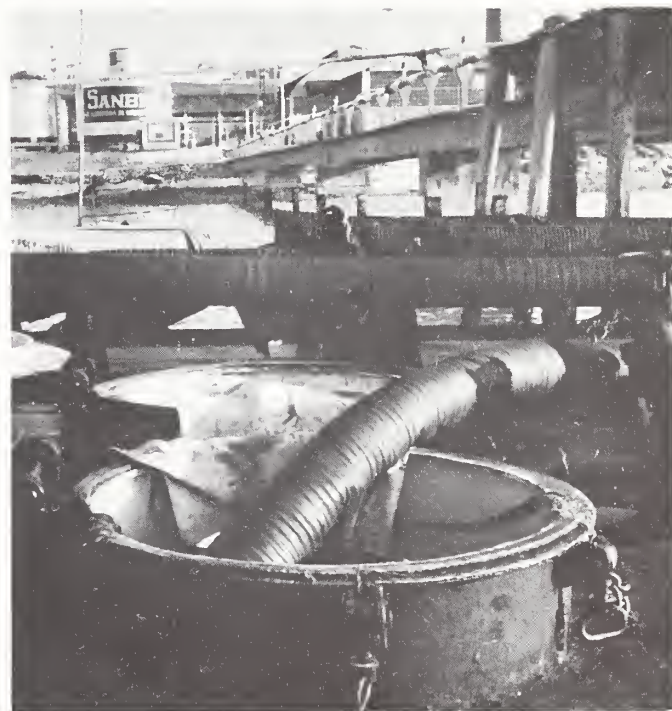
The meals produced from industrial oilseeds—except for linseed meal—are not suited to livestock feeding, so that most of the product value comes from the oil. And, although linseed meal is a well-accepted feed for cattle and hogs, its composition is such that it does not find acceptance as a poultry feed. Therefore, it has not shared in the tremendous market that the world's rapidly growing poultry industry has created for oilseeds such as soybeans, sunflowerseed, and rapeseed.

Limited largely to their oils as a source of revenue, the industrial oilseeds face yet further problems. Industrial oils, because of their chemical composition, are not generally suited to edible purposes; and, to make matters worse, the market for some of them has been restricted by increasing competition from synthetic substitute.

Flaxseed supplies outpace demand

Flaxseed, responsible in most years for about two-thirds of the world's industrial oil production and trade, has moved into a surplus situation in the last 3 years, and the world's three top producers have built up large stocks. At the end of the 1969-70 marketing year (June and July for the United States and Canada, October for Argentina), U.S. availabilities are estimated at 30 million bushels, Canada's at 22 million, and Argentina's at 18 million, for a grand total of 70 million—up 21 million from the year before.

The three countries together grow virtually all the flaxseed that enters international trade either as flaxseed or as linseed oil. Their joint output has leaped from about 45 million bushels in 1967 to 67 million in 1968, 89 million in 1969,



Top, big Manitoban field represents Canada's expanding flax acreage. Bottom, castor oil is being piped aboard ship at Salvador, Brazil.

and possibly around 100 million in 1970—less than had been expected earlier this year, but still roughly 50-60 million bushels more than effective world demand is likely to be.

USDA's August crop report forecast U.S. production at 29.1 million bushels—well below the July estimate, despite a 12-percent acreage increase, since heat and dry weather forced yields down to 9.6 bushels as against 13.5 in 1969. Canada's flaxseed area rose in response to the wheat acreage reduction, and flaxseed output is expected to reach 47 million—about 70 percent above the 28 million of 1969. Argentina increased its flaxseed area to about 2,350,000 acres; and, though drought caused the highest level of abandonment in 5 years, favorable conditions in the Buenos Aires area pushed the crop harvested in December 1969 and January 1970 to 25.2 million bushels—2.4 million more than the year before. Prospects for 1970 are as yet uncertain, since planting is still underway.

Most overstocked of the three major producers is the United States, generally No. 1 flaxseed producer and No. 2 exporter of both flaxseed and linseed oil. Canada, which leads for flaxseed exports, and Argentina, which leads for oil and meal exports, tend to build up stocks more slowly, since Argentina's price support level has been considerably lower than that of the United States, and Canadian farmers are offered no support at all. Argentina promotes the export of linseed oil to aid its domestic crushing industry, consistently supplying oil to the Rotterdam market at several cents less than the U.S. price. Canada ships its flaxseed across the continent both east to Europe and west to Japan, at rail freight rates cheaper than those possible for U.S. flaxseed. Thus, for both flaxseed and linseed oil, the price competition faced by U.S. exports has been severe.

Changing uses shrink consumption

Western Europe—especially the European Community and the United Kingdom—normally takes three-fourths of world flaxseed and linseed oil imports. Japan for seed and South Africa for oil have been other major markets.

The upturn in world flaxseed production, however, apparently bears little relation to the state of the world market for linseed oil. From the preservation of Egypt's mummies 4,000 years ago to today's cure-seal compounds for concrete highways, the many uses of linseed oil have won it appreciation as one of the finest natural coatings available. Yet its use has slid downward steadily.

In most consuming countries, especially the United States, plastic table and counter tops, plastic tablecloths, and urethane wood sealers have virtually replaced oilcloth. Plastic tiling and heavy-wear carpeting have replaced linoleum. Paints based on latex and alkyd resins have lured housepainters away from the traditional linseed oil paints by easy spreadability, good coverage, a less lingering odor, delicate colors, quick drying, lower apparent initial cost, and above all, ease of cleaning equipment after use.

U.S. linseed oil consumption, which averaged 2.1 pounds per capita in 1962, is now down to roughly 1.4. EC consumption has slipped from 2.5 pounds to about 2.1. Less developed countries are leapfrogging the West's centuries of industrialization and turning rapidly to the most advanced coatings, so that there are no major developing markets for linseed oil in these areas.

Flaxseed-producing countries have few alternatives but to grow less, while promoting flaxseed and linseed meal for animal feeding and at the same time searching out new linseed

oil uses and promoting traditional ones. The substitute coatings now in such wide use are often the low-cost byproducts of other industrial processes. A return to linseed oil as a drying and coating oil may occur as and when a true economic cost is assigned to the substitutes, based on such considerations as their drain on finite natural resources, the energy required to transform them into usable products, and the problem of disposing of them without pollution.

Rising demand for castorseed and oil

Castor oil—derived from castorseed—ranks second in importance among the industrial oils, accounting for 20 to 25 percent of world production and 25 to 35 percent of world trade. Unlike linseed oil, however, castor oil does not appear to be greatly affected by competition from synthetic products. Its unique characteristics suit it to many specialized industrial uses, and its production has trended rather steadily upward in the past 10 years, stimulated by ever-increasing world demand. This increasing production continues to be absorbed on world markets.

Expanding production of castorseed in Brazil—to an estimated record 464,000 tons in 1969—has been the major factor in world market growth for castor oil and in the level of world prices, for Brazil generally accounts for nearly half of the world's seed production and more than half of the oil exports. Brazil's—and the world's—top customer for oil is the United States, which takes over a fourth of the total imports of seed and oil (oil basis). Other industrialized countries—France, the United Kingdom, Japan, and West Germany—are also major buyers of seed, oil, or both. World exports of seed and oil set a new record, 292,000 short tons, in 1969, as did world seed production with 985,000.

Castor oil, besides being an excellent drying agent, is the starting material for the manufacture of sebacic acid, used in making plastics, nylon, and synthetic lubricants for jet aircraft. The oil is also used in the manufacture of high-grade lubricants, hydraulic fluids, soaps, paints, cosmetics, artificial leather, pharmaceuticals, varnishes, resins, and other industrial products, and in textile dyeing.

For the United States, castor oil has been a government national defense stockpile item since the late 1940's. U.S. production of castorseed has in most years covered only about 12 percent of the need. The rest has been supplied by oil imports and sales of stockpile oil; but these sales are limited by the stockpile objective, which was raised in 1969 to 50 million pounds. With research expanding industrial uses for this oil, long-term market prospects seem favorable.

Tung oil trade stagnates

Compared with linseed and castor oil, tung oil has shown little trend in either world production and trade over the decade. A tree crop, the tung nut is subject to a biennial yield cycle as well as to frost damage; and world tung oil output has ranged widely between 125,000 and 160,000 short tons. Exportable Free World supplies, however, have averaged less than a third of production, since the bulk of the world's output is consumed domestically in Mainland China.

China's exports have declined since the closure of the Suez Canal; but the production and exports of Argentina and Paraguay have increased during the decade and now account for nearly 70 percent of the world's exportable supply, compared with less than two-fifths in 1960.

(Continued on page 16)

The Dominican Republic Diversifies Exports

By CAMPOS S. DeMOYA

Office of the U.S. Agricultural Attaché, Santo Domingo

To widen and stabilize its export base, the Dominican Republic has been diversifying its exports in the last few years. Its exports of commodities not traditionally important to its economy increased at a faster rate in the years from 1966 to 1969 than did its exports of other items. This nontraditional share of the total value of exports rose from 1.01 percent to 6.16 percent in the 4-year period. Most importantly, the value of beef exports—mainly fresh or frozen—increased from \$200,000 to \$4,741,000.

Greatly aiding this diversification were changes in domestic production patterns. Traditionally the Dominican Republic has depended on four agricultural commodities for nearly all of its foreign exchange—sugar, coffee, cocoa, and tobacco. In the early 1960's, however, the country realized that continued heavy reliance on these exports was hampering its economic growth. So, acreage for such commodities as livestock, sweetpotatoes, pigeon peas, plantains, yautia, and yucca was increased at the end.

Sugar has been and still is the Dominican Republic's most important export. Overseas sales of this commodity, however, are heavily dependent on the U.S. Sugar Act and the International Sugar Agreement. Quotas allotted to the Dominican Republic fluctuate. As a result, sugar producers have taken steps to free marginal sugarcane lands for the production of other crops, most importantly, beef cattle.

DOMINICAN REPUBLIC: VALUE OF TRADITIONAL EXPORTS

Product	1966	1967	1968	1969
	1,000	1,000	1,000	1,000
	dollars	dollars	dollars	dollars
Sugar, raw	70,320	81,822	82,862	88,117
Cocoa	10,682	11,624	13,474	19,809
Coffee, green	20,963	16,967	17,922	21,253
Tobacco	6,602	10,797	11,454	12,643
Total	108,567	123,210	125,712	141,822

DOMINICAN REPUBLIC: VALUE OF NONTRADITIONAL EXPORTS

Product	1966	1967	1968	1969
	1,000	1,000	1,000	1,000
	dollars	dollars	dollars	dollars
Peppers	58	197	248	414
Pumpkins	18	45	78	218
Sweetpotatoes	6	38	113	160
Coconuts	319	550	605	562
Pigeon peas	285	662	1,473	1,265
Plantains	29	105	0	292
Cucumbers	0	72	225	142
Tomatoes	10	46	69	127
Yautia	70	229	553	733
Yucca	104	220	284	440
Onions	0	1	4	21
Avocado	0	144	69	189
Subtotal	899	2,309	3,721	4,563
Livestock, meat, and meat products	200	673	4,111	4,741
Total	1,099	2,982	7,832	9,304

Coffee and cocoa production have fallen from past high levels. Although a good cocoa crop was harvested during the 1969-70 season, a majority of the trees producing these crops are as much as 60 years old. In response to comparatively better prices, land suited to the production of other agricultural commodities has been transferred from these two products. This, plus neglect and poor management, has lowered production.

Dominican Republic tobacco exports are primarily "black" tobacco, shipped to Europe, especially Spain. Cigar tobacco also goes to the United States and Europe. Depending on weather conditions, tobacco crops fluctuate widely, both in quantity and quality.

The most important of the Dominican Republic's new, non-traditional exports is livestock products. In 1967 the Government drastically reduced heavy export charges on livestock and meat. About the same time the Dominican meat inspection system was certified by the U.S. Department of Agriculture and the country became an acceptable source of beef for the U.S. market—primarily Puerto Rico. In the past 3 years, two packing plants have been modernized and two new facilities have been built to export livestock products. Dominican exports are mainly fresh or frozen beef; nearly all shipments are to the U.S. market.

The total value of a number of nontraditional fruit and vegetable exports increased more than five times from 1966 to 1969. The export value of these commodities was up to \$4,563,000 in 1969, compared with only \$899,000 in 1966.

- Pigeon pea exports reached a peak of about \$1.5 million in 1968. While the figure decreased to \$1.3 million the following year, it was still more than four times the value of the amount exported in 1966.

- There was a more than sevenfold rise in the value of peppers sold abroad from 1966 to 1969. The value of shipments increased by \$356,000 during the period to \$414,000.

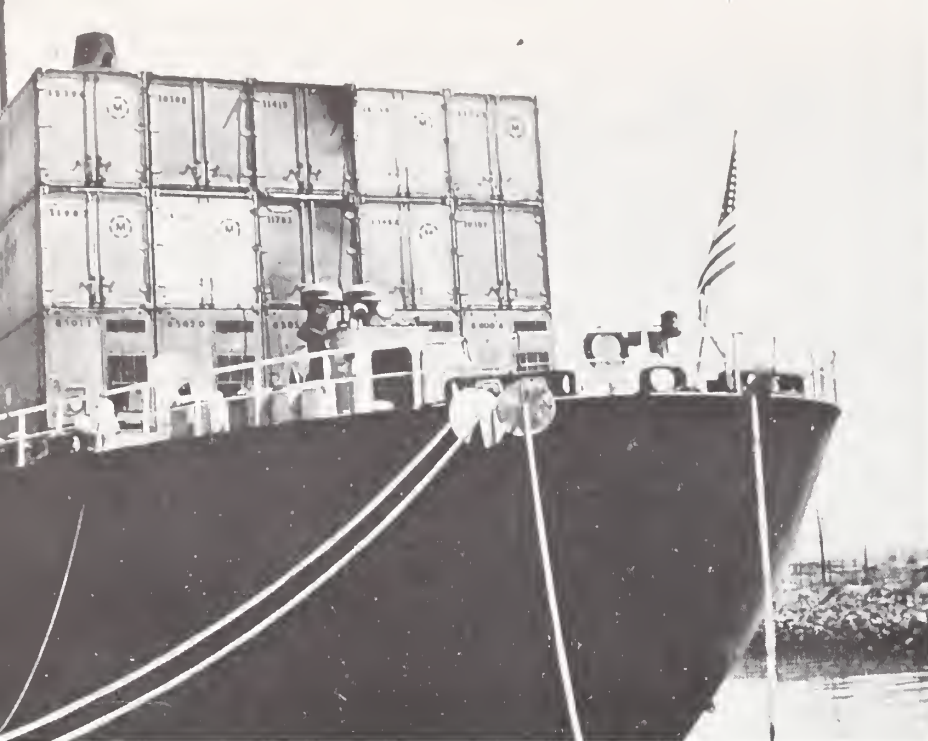
- Cucumber exports, valued at \$72,000 in 1967, had nearly doubled by 1969. No cucumbers at all were exported in 1966.

- Exports of yautia, a starchy root—valued at \$70,000 in 1966—had increased to \$733,000 in 1969.

- There was a nearly threefold growth in the value of avocado exports from 1968—at \$69,000—to 1969. A drought in 1968 that affected many Dominican commodities, including avocados helped reduce exports in that year. Shipments in 1967—the first year in which avocados were exported—were valued at \$144,000.

The main markets for Dominican fruit and vegetable exports are Puerto Rico and the ever-growing Latin populations of New York City and Miami. Dominican producers of these items would like to see a gradual increase in the demand for these products. To this end, the Government recently organized a committee to find new markets for these exports.

The Dominican Republic will probably export more of both nontraditional and traditional agricultural commodities during 1970 than during previous years—an uptrend that may continue for the next several years. This rise is forecast because of the increased land being used for the production of these commodities. Also, more fertilizer, insect and disease controls, and better management techniques are all being utilized to develop the agricultural sector of the country.



Containerization—revolution with growing pains.

The trip from Florida to Frankfurt or from California to Calais can be a crushing experience for perishable agricultural products such as fruits and vegetables. All too frequently they emerge from the ship's hold or shipping container battered and bruised and are rejected by unsmiling importers as untouchables.

There is tremendous potential for fruit and vegetable sales in Western Europe as many countries in that area do not produce sufficient amounts or varieties of fresh fruits and vegetables, especially during the winter months, to meet growing consumer demand.

With visions of their products in European salad bowls and fruit trays, numerous exporting countries vie with each other to deliver high-quality produce to European importers.

In the face of this increasing competition it is becoming more and more important for U.S. products to arrive at overseas destinations in good condition, on schedule, and at a cost that will make them competitive with the same products from other sources.

The causes of bad arrivals of U.S. fruits and vegetables in European markets are numerous. They range from poor grading of the product at the packinghouse to inadequate refrigeration in transit. Many of these problems can be eliminated by making better use of the equipment, facilities, and services that are already available. For example, one of the most chronic contributors to

spoiled perishables during transit is poor coordination of scheduling, whereby a shipment literally "misses the boat" and is left on the pier for days and sometimes even weeks.

However, other factors related to both the conventional breakbulk (where individual boxes are rehandled each time the cargo is transferred from one mode of transport to another) and new containerized methods of transport are also responsible for cargo damage. These include faulty or poorly managed ventilation, temperature control, refrigeration equipment, loading patterns, and handling techniques.

Containerization—a method of handling freight in which the cargo remains in the same van container from shipping point to final destination—has revolutionized maritime trade in just a few years. However, in many ways this transport method is still in the toddler stage and is experiencing growing pains.

Behind the shipping scene—in warehouses, on ships, in labs, and on the loading platform—efforts are continually in progress to perfect shipments by both the van container and breakbulk methods.

One such effort is taking place in Rotterdam at a year-old research center and laboratory staffed by a transportation specialist and a horticulturist from USDA's Agricultural Research Service (ARS). The team's objective is to identify special problems in overseas transport of U.S. agricultural products to

Preserving the Efforts Underway Fruit and Vegetable

West European markets and to test solutions to these problems through experimental shipments originated at various U.S. ports.

Rotterdam is a major trade center and focal point for receiving and transshipping U.S. agricultural products, and the port, also known as "Europort," has the most extensive container-receiving and handling facilities in Europe. Rotterdam also has excellent air, rail, highway, and water connections with all other areas of Western Europe. About two-thirds of all shipments of agricultural products made to Western and Northern Europe during the past 5 years have moved through the Rotterdam-Antwerp port area.

Besides their observations at Rotterdam, the researchers have also met shipments of U.S. fruits and vegetables at other European ports and at many inland warehouses and retail outlets to determine the state of the shipments, and if there is damage, to analyze the extent and causes of the deterioration, and initiate research to eliminate the problem in future shipments.

The horticulturist, William Chace, diagnoses the nature of the illness. Has a microbe or physiological disorder affected the commodity? Or was the damage a result of faulty temperature control or rough handling?

The transportation specialist, Russell Hinds, evaluates packaging, loading and handling methods, and refrigeration equipment and suggests solutions, ranging from proper stacking patterns to correct temperatures, which will prevent deterioration, alleviate physical damage caused during transit, and reduce costs.

In order to see if the proposed solutions are really effective, numerous experimental tests have been conducted. For example, a test was run on a shipment of celery traveling from Florida to Rotterdam to determine which container size would be the most practical for

Perishables: To Increase U.S. able Exports

transporting this commodity overseas.

A number of shipments of California grapes going to European markets were tested to compare the performance of less expensive, easier-to-handle fiberboard boxes with conventional wooden lugs.

The observations made from these tests have served as a basis for recommendations to many shippers and related groups for steps that need to be taken to reduce their shipping losses and costs.

Attention to detail pays off in the long run and, as these tests show, when shipping perishables little things can mean a lot. A deficiency of just a few degrees in temperature in a container can mean spoilage of the entire load.

The team in Rotterdam reports its findings to ARS research stations in U.S. producing areas, and advises U.S. exporters on the technical requirements that will enable their products to be shipped in the best possible condition. For instance, the team recently prepared a detailed list of recommendations for exporting Florida citrus with suggestions ranging from proper temperature in the van container (according to maturity of the fruit when shipped) to the proper way of packing the van.

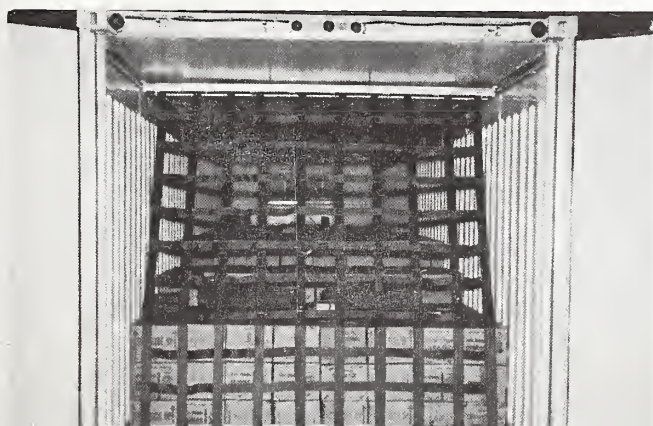
As the research continues, more and more improvements will be made to help preserve the quality, expand the quantity, and reduce the costs of transporting U.S. agricultural exports. A.L.B.

*Improper stacking
in the hold or
container damages
perishables.*

*Right, boxes on
top layer pressed
into refrigeration
duct causing freeze
damage. Below
improper stacking
resulted in dam-
aged celery crates.*



*Proper stacking
and bracing,
right and below,
kept the products
secured from
loading point to
destination.*



After its first 9 years

A Review of India's "Package Program"

By A. A. JOHNSON and K. E. EAPEN
*Intensive Agricultural Development Program
The Ford Foundation, New Delhi*

Nearly a decade has passed since the Intensive Agricultural Districts Program (IADP) was inaugurated on a pilot basis in each of India's 16 States in 1961. Popularly known as the "Package Program," IADP sought to teach Indian farmers how to make a coordinated approach to their age-old problems of production, marketing, and financing.

The Package Program, first recommended in 1959 by a team of agricultural experts under the chairmanship of USDA's Dr. Sherman Johnson, used intensive demonstrations on local plots to underline the advantages of the combined use of fertilizers, improved seeds, pesticides, and simple but efficient tools and implements. It taught farmers to draw up farm plans and to use them to obtain credit. To encourage the farmers further, the Package Program also called for the establishment of facilities to test soil and seed, farm implement workshops, and an information infrastructure.

The Government of India was enthusiastic about the early results of the Package Program and evidenced its approval by incorporating it as part of its Fourth 5-Year Plan. The Package Program has received the support of many organizations including the Ford Foundation, the Agency for International Development, and numerous agencies of the Indian Government. Here is a brief view of some of the successes and problems faced by the IADP in 9 years of life.

Surge in foodgrain production

The prospect that India could raise a hundred million tons of foodgrains in 1969-70, just 3 years after the drought of 1966-67, seemed to many observers to be an unattainable goal. This has been done, however, despite all the dismal forecasts. (By the end of the Fourth 5-Year Plan, India's plan is to hit the 129-million-ton mark.)

Indian farmers who have caught glimpses of the "Green Revolution," and who have developed a sense of confidence about increasing their production, owe much to the Package Program, a weaving together of many different technical and administrative strands that produced the fabric of India's agricultural modernization program.

The merging of skills, innovations, and technological advances has created progress, though not uniformly, throughout India. In certain pockets, such as Ludhiana District (where the essential crop is wheat), and in Thanjavur in the south (where it is mostly paddy), good results have been noted. By and large, however, the Indian breakthrough has been confined to Districts in the Intensive Agricultural Districts Program and to areas that are irrigated. It has been restricted primarily to selected crops; this is particularly true in the dry season. The dramatic surge in wheat production is still not paralleled in the output of rice and of other major foodgrains.

Ludhiana District, which encompasses about 1,000 villages of Punjab State, and about 40,000 of its farm families, is in the forefront of India's agricultural advancement. Farmers

there were quick to adopt the Package Program's early training—the use of suitable seed, sowed at the right time and properly fertilized, and correctly harvested. Later the farmers there shifted their emphasis. In 1965-66, dwarf wheats arrived in the District. One of these varieties—Lerma Rojo—was tried on some 173 acres of about 100 farms. By 1968-69, its use spread to 463,000 acres. District farmers adopted the dwarf varieties with such avidity that wheat production in the District more than doubled in a few years.

And even a "star" District such as Ludhiana is not without its problems. There are floods that are largely uncontrolled, waterlogging of some areas, and increasing salinity in others. And although many of Ludhiana's farmers have seen the increased production resulting from the use of Package-Program ideas, many others are still reluctant to heed the expert advice that is available to them. Farmers sometimes ignore advice.

For example, the soil of Punjab State was so generously rich in potassium and phosphorus that farmers tended to fertilize only with nitrogen. Now that the soil also needs potash, phosphate, and micronutrients, farmers often refuse to follow the advice of expert agronomists. As a result of this, a Punjab University survey stresses that "the inherent fertility of the State's soil has been depleted to a dangerous level."

In order to overcome attitudes like this one, the new IADP strategy, emerging for the 1970's, recognizes the requirements and needs of each region and each class of farmers. This fresh approach will be area-based. The wheat belt, for example, will have a reliable package of practices that will not be duplicated elsewhere. Package plans in all regions will be specifically related to local soils and climate. The paucity of



local area-based rice research, however, is one of the bottlenecks slowing down progress toward a wider dissemination of agricultural modernization methods. It is difficult to design a package for the monsoon rice-crop areas.

Multiple cropping and national demonstrations, for extension purposes, will form part of the "new twist" in strategies being evolved. Fifty-one pilot projects in multiple cropping are to be launched throughout the year. Experiments have proved that by appropriate rotation of new short-duration varieties of bajra, jawar, maize, paddy and wheat, output can be vastly increased. Nadia District (West Bengal), for example, has shown that timely sowing of barley, mustard, sweet potatoes, vegetables and wheat, between rows of standing paddy, produces excellent short-term crops.

There are many problems in making the orderly change from millennia-old traditions to modern practices. One of the challenges in sustaining India's agricultural development is the weakness of the marketing system. Ten trains have pulled as much as a thousand tons of wheat a day out of Ludhiana during peak wheat-harvesting seasons; but, considering the country as a whole, this is the exception rather than the rule.

Production explosion

High-yielding varieties are leading to "production explosions" in certain areas. These clamor for improved transportation methods. Production methods appear to have gotten ahead of transportation and marketing techniques. Such second generation problems created by the agricultural breakthrough are reflected, for example, in Andhra Pradesh. There the State Government has suggested that areas planted to produce a second crop of paddy be restricted to avoid a glut,

The inability of Indian farmers to borrow money at reasonable rates of interest is one of the factors hindering the development of India's agriculture. Of 560,000 Indian villages, only a little over 5,000 have commercial banking facilities. Even though an average of five rural bank branches are being

opened daily, it will be a long time before commercial credit facilities spread to most of the villages.

Cooperatives have not met the farmers' credit needs. Agricultural modernization, demanding greater investments, will have to sprout, therefore, in the traditional money-lending atmosphere. Here, also, radical changes have sporadically taken place in districts such as Raipur (Madhya Pradesh) where the Dena Bank and D. Morarji Chemicals Company are operating together to make credit available.

Rainfed farming

Much of Indian agriculture is still tied to the monsoon. Even with the advent of assured water supplies, bumper crops in some areas will be achieved only following favorable rains. Therefore, there is some urgency in devising new and practical cultivation practices especially suited to rainfed farming. Where water has been traditionally available, better management practices are called for. Where new water supplies are being developed—from canals or underground sources—farmers must be trained how to use this new and valuable resource. And now, as in the past, India must solve its problems of land distribution.

Increased production now sweeping some parts of the country, is, next to Indian independence, the most exciting event of the century. Able Indian leadership, the ability of Indian farmers to quickly adopt profitable practices, the help of foreign experts, and four good monsoons in a row, all are broadly responsible for this agricultural metamorphosis of the late sixties. Agricultural modernization, however, must be more than a mere transformation in food production. If not, the seeds of development may be seeds of instability.

It is true that the benefits of agricultural development have come in absolute terms to most people, but these have not filled the gaps of existing disparities in rural incomes. Only more equitable income distribution and fuller employment opportunities can lead to orderly rural transformation.



India's package program stresses modernization in all areas—from transportation to market (left) to rice transplanting methods (right).



U.S. Promotions Boost Tallow Use in Japan

Bubbles and Barks Draw Crowds to NRA Instore Exhibits

Soap, dog food, and poultry feed—seemingly worlds apart but actually related through one common ingredient—tallow. At the present time the United States produces over 5 billion pounds of tallow a year and 40 percent of this is exported. The greatest share of U.S. tallow exports go to Japan. Other leading markets are Italy, Spain, the Netherlands, and India.

Japan's imports of tallow hit a new high last year—267,000 metric tons—and over 85 percent was purchased from the United States. Since 1948, U.S. tallow has become the major raw material used by Japan's fat and oil processing industry for making soap, hydrogenated oil, fatty acids, and related products. Demand for tallow-based commodities is increasing, and new industrial uses for tallow are being found.

One of the big users of tallow in Japan is the soap industry. Toilet soap production in 1969 rose 4 percent over the 1968 level and monetary sales were up 9 percent during the same period. This reflects not only a rise in consumption but also increased purchases of quality soap. Although laundry soap continues to decline with the rise of detergents, the use of industrial soaps has grown over 10 percent in the past year.

In cleanliness-conscious Japan the per capita soap usage is still below that in England, the United States, and Canada. Therefore, the National Renderers Association (NRA), which promotes U.S. tallow abroad, continues to promote soap use in Japan.

The NRA annual instore soap promotion got underway in May with shows held at the Takashimaya Department Stores in Osaka, Kyoto, and Tokyo. Special features at the NRA booth were the appearance of "Little Princess Soaps" (one American and one Japanese girl), a soap-spewing "Foam Fantasy" machine, and a display of attractive soap gift packages.

Besides this spring's soap promotions the NRA also participated in the Japan Poultry Association's national exhibition which was attended by over 20,000 poultrymen from all areas of Japan. NRA's feed fat and animal protein booth acquainted the poultry raisers with the

advantages of using fat in feed in terms of production increases and consequent monetary profits.

Another recent activity was a dog food promotion held at the Takashimaya Department Store chain in Tamagawa, Tokyo, and Kyoto. Dog food—one of many animal feeds which are enriched by the addition of animal fat—was introduced to Japan a few years ago. Sales in 1969 totaled 20,000 tons, double that of the previous year. NRA, acting jointly with Japan's dog food manufacturers and importers of U.S. dog food, has been conducting extensive consumer promotion programs. At the Takashimaya show in Tokyo, 25,000 samples of dog food and promotional pamphlets were distributed to visitors.

Another growing use of U.S. tallow is in Japan's rapidly growing feed industry. Japan's poultry and livestock industries are expanding and feed fat is quickly becoming accepted as an ingredient in high energy feed rations. Usage of both fats and oils (including vegetable) by feedmakers has zoomed from zero to over 30,000 metric tons during the past 3 years.

The agricultural cooperative Zenkoren, which produces over 40 percent of Japan's feeds, recently announced that over 50 percent of their 60 feed mills will have fat equipment installed by the end of 1970 making it possible to double the 1,400 tons of animal fat they use each month. Fat equipment is also being installed in a number of other major feed mills in Japan.

An eight-man team from Zenkoren visited the United States this spring under the joint sponsorship of the National Renderers Association and the Japan Oils and Fats Processing Industry Association. During their stay here the group toured U.S. rendering and soap manufacturing facilities from coast to coast. They were shown the origin of much of the feed grade fat being used in Japan and also became acquainted with U.S. methods of cattle and poultry production and processing. This study team was the fourth such group to tour facilities in the United States during the past 12 years.



A talking dog captivates Japanese youngsters at an NRA-sponsored dog food promotion, above, while below, "Princess Soaps" distribute samples at an NRA soap booth.



CROPS AND MARKETS SHORTS

Weekly Rotterdam Grain Price Report

Current offer prices for imported grain at Rotterdam, the Netherlands, compared with a week earlier and a year ago, are as follows:

Item	Sept. 9	Change from		A year ago
		Dol. per bu.	Cents per bu.	
Wheat:				
Canadian No. 2 Manitoba	2.04	0		1.90
USSR SKS-14	(¹)	(¹)		1.76
Australian Prime Hard	(¹)	(¹)		1.80
U.S. No. 2 Dark Northern Spring:				
14 percent	1.97	0		1.81
15 percent	2.01	+1		1.90
U.S. No. 2 Hard Winter:				
13.5 percent	1.91	-1		1.78
Argentine	(¹)	(¹)		(¹)
U.S. No. 2 Soft Red Winter ..	1.82	+4		1.57
Feedgrains:				
U.S. No. 3 Yellow corn	1.87	-4		1.40
Argentine Plate corn	1.99	-1		1.73
U.S. No. 2 sorghum	1.69	+2		1.42
Argentine-Granifero	1.72	+2		1.49
Soybeans:				
U.S. No. 2 Yellow	3.22	+2		2.75

¹ Not quoted.

Note: All quoted c.i.f. Rotterdam for 30- to 60-day delivery.

U.S. Buys More Livestock Products

The value of livestock, meat, and meat product imports totaled \$119.8 million compared with \$105.9 million a year ago. The 13.2-percent increase in value is attributed almost wholly to higher unit values for boneless beef imports this July compared with last year. Boneless beef imports totaled 101.3 million pounds and were valued at \$53.2 million, at a per unit value of approximately 52.5 cents per pound. Last year, boneless beef imports in July totaled 100 million pounds and were valued at \$46.6 million with a per unit value of 46.5 cents per pound.

Another item of interest in the beef and veal category is the substantial increase in imports of prepared beef cuts. These cuts come primarily from Guatemala and Honduras. Imports totaled 2.1 million pounds compared with only 88,000 pounds a year earlier. Entries for the first 7 months this year totaled 7.5 million pounds.

Fresh, chilled, or frozen lamb imports, at 6.7 million pounds, coming almost entirely from Oceania, were up 52.6 percent from the 4.4 million pounds imported in July last year.

Wool imports at 13.7 million pounds were down almost 14 percent from last year. The fall in duty-free imports more than offset the gain recorded in dutiable imports.

Imports of fresh, chilled, or frozen pork and live hogs have risen considerably in the past 7 months. Canada is the only supplier of live hogs, and almost all the fresh, chilled, or frozen pork imports originate there. During the January-July period, imports of live hogs totaled 40,000 head compared

U.S. IMPORTS OF SELECTED LIVESTOCK PRODUCTS

Commodity	July		January-July	
	1969	1970	1969	1970
Red meats:	1,000	1,000	1,000	1,000
Beef and veal:	pounds	pounds	pounds	pounds
Fresh, chilled, or frozen:				
Bone-in beef	1,398	1,546	10,380	15,016
Boneless beef	100,040	101,293	538,033	624,648
Cuts (prepared)	88	2,149	972	7,452
Veal	1,138	1,286	14,832	13,962
Canned beef:				
Corned	8,485	6,087	49,374	50,444
Other, including sausage	2,036	2,103	10,011	16,259
Prepared and preserved	7,081	9,649	37,996	39,085
Total beef and veal ¹	120,263	124,114	661,596	766,864
Pork:				
Fresh, chilled, and frozen	3,459	5,995	27,713	35,088
Canned:				
Hams and shoulders	21,674	21,786	142,982	150,465
Other	3,119	3,079	16,992	20,549
Cured:				
Hams and shoulders	295	150	920	818
Other	363	272	2,212	2,340
Sausage	346	302	2,011	1,969
Total pork ¹	29,255	31,582	192,828	211,231
Mutton and goat	4,573	5,899	28,557	37,092
Lamb	4,361	6,655	23,871	26,792
Other sausage	809	801	4,918	6,200
Other meats	1,075	1,174	7,042	10,535
Total red meats ¹	160,339	170,225	918,810	1,058,716
Variety meats	384	575	2,431	5,385
Edible and inedible tallow and grease	780	700	8,353	4,396
Meat extract	70	155	543	670
Wool (clean basis):				
Dutiable	5,064	7,842	57,954	60,179
Duty-free	10,793	5,820	53,859	40,824
Total wool ¹	15,855	13,661	111,812	101,002
Animal hair	221	106	4,281	1,494
Hides and skins:				
Cattle parts	20	131	138	977
Sheep skins pickled and split	594	1,450	5,645	7,865
	1,000	1,000	1,000	1,000
	pieces	pieces	pieces	pieces
Cattle	32	36	175	237
Calf and kip	128	73	438	379
Buffalo	59	27	290	131
Sheep and lamb	2,121	1,294	16,118	12,649
Goat and kid	359	173	3,221	2,759
Horse	19	15	129	125
Pig	63	47	434	537
Livestock:	Number	Number	Number	Number
Cattle ²	36,607	42,818	521,609	711,830
Sheep	35	66	1,669	1,888
Hogs	1,125	13,734	5,748	40,000
Horses, asses, mules, and burros	315	366	1,922	1,920

¹ May not add due to rounding. ² Includes cattle for breeding. Bureau of the Census.

with only 5,748 head last year. If these 40,000 head were all slaughtered, they would represent less than one-tenth of 1 percent of the Federal inspected hog slaughter for the first 7 months of this year. Fresh, chilled, or frozen pork imports, at 35.1 million pounds, were up 26.6 percent from last year. Favorable U.S. prices have contributed to the movement of Canadian pork and live hogs to the U.S. market for slaughter. Hog numbers in Canada on June 1 were estimated by the Dominion Bureau of Statistics at 7.4 million head—up 23 percent from 1969. The Dominion Bureau of Statistics says the number of hogs expected to farrow in the current 6-month period, June to November, is up 23 percent.

Sales of U.S. Livestock Products Up

The value of livestock, meat, and meat product exports in July, at \$44.4 million, was up 14.7 percent from a year ago. Increased exports of inedible tallow and lard and higher per unit values this July compared with last accounted for the increase in value.

Lard exports totaled 38 million pounds—more than triple their year-earlier level and only slightly below the February high of 38.1 million pounds.

Exports of inedible tallow at 186.0 million pounds were up 33.4 percent from last year. Exports of edible tallow at 0.5

U.S. EXPORTS OF SELECTED LIVESTOCK PRODUCTS

Commodity	July		January-July	
	1969	1970	1969	1970
	<i>1,000 pounds</i>	<i>1,000 pounds</i>	<i>1,000 pounds</i>	<i>1,000 pounds</i>
Animal fats:				
Lard	11,054	38,025	131,490	199,479
Tallow and greases:				
Inedible	139,221	185,971	1,138,281	1,318,893
Edible	1,191	500	8,306	10,733
Meats:				
Beef and veal	2,102	2,734	15,373	17,295
Pork	7,506	4,224	91,728	25,535
Lamb and mutton	127	67	1,012	588
Sausages	356	279	2,985	2,308
Meat specialties	391	240	2,463	2,148
Other canned	732	472	5,690	4,682
Total red meats ¹	11,213	8,014	119,251	52,549
Variety meats	25,211	14,463	131,203	126,474
Sausage casings (animal origin)	895	873	6,450	7,064
Animal hair, including mohair	1,603	585	11,724	9,267
Hides and skins:				
Cattle parts	2,683	565	20,322	7,285
	<i>1,000 pieces</i>	<i>1,000 pieces</i>	<i>1,000 pieces</i>	<i>1,000 pieces</i>
Cattle	1,104	1,160	8,234	9,165
Calf	95	76	836	588
Kip	36	11	277	120
Sheep and lamb	317	330	1,687	2,189
Horse	3	6	34	91
Goat and kid	35	36	212	158
Livestock:	<i>Number</i>	<i>Number</i>	<i>Number</i>	<i>Number</i>
Cattle and calves	1,980	2,270	20,374	18,218
Sheep, lambs, and goats	10,605	13,125	79,363	77,293
Hogs	724	1,564	10,799	10,063
Horses, asses, mules and burros	1,100	926	6,519	35,611

¹ May not add due to rounding. Bureau of the Census.

million pounds were down 58 percent due to reduced shipments to Canada.

Pork exports are continuing their downward trend in 1970 from their record 1969 level. At 4.2 million pounds, they were down 43.7 percent from last year bringing the 7-month total to 25.5 million pounds compared with 91.7 million pounds last year. The recovery of pork production in Canada and Japan has been responsible for the downward trend in pork exports this year.

Variety meat exports, at 14.5 million pounds, were down 42.6 percent from 1969. Through June, variety meat exports had kept pace with the record levels attained last year.

Live hog exports of 1,564 head, destined mainly to Mexico, were more than double their July 1969 level of 724 head.

Fishmeal Production Increases

From January to May 1970, production of fishmeal in the major producer-exporter countries (Peru, Norway, South Africa, and Chile), which account for roughly three-fifths of world production and over four-fifths of world exports, increased to 1.7 million short tons. This was 20 percent above the 1.4 million tons for the same 5 months last year. Projected total world fishmeal output will exceed last year's low production by roughly 650,000 tons, establishing a new record of about 5.6 million tons. The increase chiefly reflects estimates of larger output in Peru and Norway, although other producers such as Canada, Denmark, the USSR, Japan, and Angola are also expected to continue to expand.

Interestingly, although production so far this year has picked up substantially from the 1969 low, prices continue to be buoyant at levels significantly above last year's. This may in part reflect the fact that exports continue to trail last year's volume. This has already resulted in a significant buildup in stocks in the major producer-exporter countries. Although stocks are substantially below the record accumulations in 1968, continuation of the present pace of market uptake plus production at the projected level will swell this volume sharply by the end of December.

Export availabilities in 1971 may be sharply above this year's unless there is a sharp falloff in output. At any rate, present price patterns for fishmeal seem less reflective of supplies than they did a year ago.

PRODUCTION, EXPORT, AND RETENTION OF FISHMEAL

Year	Production ¹		Exports ¹		Residual ¹	
	Change from previous		Change from previous		Change from previous	
	Actual	year	Actual	year	Actual	year
	<i>1,000 short tons</i>	<i>1,000 short tons</i>	<i>1,000 short tons</i>	<i>1,000 short tons</i>	<i>1,000 short tons</i>	<i>1,000 short tons</i>
1963	1,821	—	1,724	—	97	—
1964	2,391	+570	2,233	+509	158	+61
1965	2,134	-257	2,006	-227	128	-30
1966	2,638	+504	2,115	+109	513	+385
1967	3,118	+480	2,732	+617	386	-127
1968	3,341	+223	3,351	+619	10	-376
1969	2,811	-530	2,633	-718	178	+168
January-May						
1969	1,404	—	1,246	—	158	—
1970	1,689	+285	1,221	-25	468	+310

¹ Includes Peru, Chile, Norway, and South Africa.

Buenos Aires Tung Oil Exports Down

Tung oil shipments from Buenos Aires, presumed to represent virtually all of the exports of that commodity from Argentina and Paraguay and over two-thirds of world exports, dropped to only 39.5 million pounds in the marketing year ending July 31, 1970, compared with the record volume of 78.4 million pounds exported in 1968-69. The decline reflected reduced oil output from the nut crop that was harvested in the first part of 1969.

Exports of Argentine oil, at 26.0 million pounds in 1969-70, accounted for 66 percent of the total. Argentine oil, however, accounted for only 36 percent of the total volume indicated as having moved to the United States.

In 1969-70, 11 million pounds, or 28 percent of the Argentine-Paraguayan total, was indicated as destined for the United States, compared with 19.8 million pounds, or 25 percent in 1968-69. Exports to countries other than the United States, at 28.5 million pounds, declined by more than 50 percent from the 58.6 million pounds exported in 1968-69.

TUNG OIL PRICES¹

Month	1966	1967	1968	1969	1970
	<i>U.S. cents</i>	<i>U.S. cents</i>	<i>U.S. cents</i>	<i>U.S. cents</i>	<i>U.S. cents</i>
	<i>per pound</i>	<i>per pound</i>	<i>per pound</i>	<i>per pound</i>	<i>per pound</i>
January	19.1	13.1	14.0	11.6	25.9
February	19.1	13.0	13.7	12.4	25.9
March	(²)	12.2	12.7	12.6	25.7
April	(²)	11.8	11.2	12.6	25.5
May	18.8	11.7	11.0	13.3	23.9
June	18.1	11.8	11.0	14.9	22.0
July	16.9	11.6	10.8	14.9	20.3
August	15.7	11.3	9.8	15.0	18.9
September ...	15.5	11.3	9.8	16.7	—
October	15.2	12.1	9.9	25.1	—
November ...	14.8	13.5	9.6	25.1	—
December ...	13.1	14.1	12.0	25.5	—
Average ...	16.6	12.3	11.3	15.9	—

¹ South America c.i.f. Europe, 1966-68; South American, ex-tank Rotterdam 1969-70. ² Not quoted. ³ Preliminary.

Compiled from *Public Ledger*, London (Saturday editions).

TUNG OIL SHIPMENTS FROM BUENOS AIRES

Month	Year beginning August 1				
	1965	1966	1967	1968	1969
	<i>Million</i>	<i>Million</i>	<i>Million</i>	<i>Million</i>	<i>Million</i>
	<i>pounds</i>	<i>pounds</i>	<i>pounds</i>	<i>pounds</i>	<i>pounds</i>
August	0.4	2.8	4.3	4.4	2.9
September	2.8	6.0	4.6	6.2	3.9
October	2.2	3.3	12.5	6.6	6.1
November	2.5	7.7	4.6	6.1	4.5
December	3.1	4.5	11.4	5.9	6.5
Total (Aug.-Dec.) ...	11.1	24.4	37.4	29.2	23.9
January	4.4	9.1	5.4	4.0	4.2
February	3.0	4.9	3.6	9.6	2.0
March	4.6	5.8	2.7	7.8	4.1
April	3.0	6.9	5.3	8.9	2.0
May	4.0	4.8	2.3	7.3	.4
June	3.1	2.9	5.3	2.8	1.5
July	2.4	7.7	4.4	8.8	1.4
Total (Jan.-July)	24.6	42.1	29.0	49.2	15.6
Grand total	35.7	66.5	66.4	78.4	39.5
Total to U.S.	23.7	22.9	16.7	19.8	11.0

¹ Preliminary. Totals computed from unrounded data. Compiled from shipments data, *Boletín Marítimo*, Buenos Aires.

Other major consumers such as Japan, the United Kingdom, West Germany, and the Soviet Union thus had to either seek more oil from other sources, chiefly Mainland China, or do without. The result was a tung oil price increase to the highest level in recent years. The marked price revival brought with it some increase in exports from Mainland China, although that country's export volume remains far below the level it reached a decade ago.

South American exports in the marketing year beginning August 1, 1970, from nuts harvested in the March-June period this year could increase by roughly 40 million pounds, thus approximating the large 1968-69 volume. World exports, however, probably will decline in calendar 1970 and remain substantially below the large 1967 volume, reflecting the expectation of smaller movements from Mainland China as prices decline.

Prices for South American tung oil, ex-tank Rotterdam, increased sharply in late 1969 because of the reduced flow of oil from the 1969 crop. Despite wide price fluctuations, consumption in recent years has been far more stable than price. Therefore, sharply higher prices in 1969-70 have not significantly affected the consumption rate.

U.S. Cotton Crop Dims Export Hopes

U.S. cotton output in 1970-71, forecast September 1 at approximately 10.7 million bales of upland cotton and 78,600 bales of American Pima, may disappoint exporters. Although these figures represent an increase of about 800,000 bales over last year's crop, carryover into 1970-71 is down about 900,000 bales from a year earlier; as a result, the total cotton supply will have decreased marginally.

After allowing for about 8 million bales in domestic consumption, less than 3 million bales of upland cotton from the new crop would be available for export. Both domestic and foreign buyers can draw on the carryover, of course, if total offtake exceeds the new crop. But the carryover of about 5.7 million bales contains only limited quantities of the shorter staple lengths—less than 1-1/16 inches—which normally account for a large part of U.S. export trade.

Based on early estimates, foreign Free World cotton consumption and production are expected to be around 27.3 million and 25.5 million bales, respectively. The resulting deficit of 1.8 million bales, together with anticipated net exports to Communist countries of about 1.7 million bales, would indicate an export potential for the United States of about 3.5 million bales. If the September 1 cotton forecast is correct, the supply may not be adequate to meet the full export potential.

However, upland production in Texas, which accounts for a large part of U.S. shorter staple lengths, is forecast to increase by over 600,000 bales. This would indicate some improvement in the distribution of staple lengths in the U.S. cotton supply for the 1970-71 season.

Nigeria Ups Cocoa Producer Price

Beginning with the 1970-71 October-September cocoa harvest season, Nigerian farmers will receive U.S. 19.38 cents per pound for Grade 1 and 17.50 cents per pound for Grade 2 cocoa beans. This represents an increase of 0.63 cents per pound over prices paid to growers last season.



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Foreign Agriculture

USSR Cocoa Bean Imports Off

Reflecting short world supplies and high prices, USSR imports of cocoa beans in 1969 fell by 9.5 percent to 98,600 metric tons from the record 1968 level of 109,000 tons.

Cocoa consumption in the USSR has been expanding rapidly, and the Soviets now rank as the world's fourth largest importer of cocoa beans.

EC Quota for Spanish Raisins

The European Community has announced a 2,342-short-ton duty-free quota for Spanish raisins packed in containers holding not more than 33 pounds net weight. Initial country allotments totaling 1,874 tons have been established as follows:

	Short tons
Germany	106.9
France	1,225.7
Italy	211.6
Netherlands	106.9
Belgium-Luxembourg	222.6

The quota will be effective from October 1, 1970, through December 31, 1971.

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West German Asparagus Tender

West Germany has issued a tender allowing imports of canned asparagus tips from the United States. Applications for licenses are being accepted until December 22, 1970. Licenses, issued only to applicants who received licenses under a previous tender, will be valid until December 31, 1970.

Industrial Oils Lag in World Trade

(Continued from page 6)

The United States is the world's largest importer; other major markets are the Common Market, Japan, and the United Kingdom, which together account for more than half of the Free World's imports. But annual world trade in tung oil has been largely static, never exceeding 60,000 short tons during the 1960's and frequently falling below 45,000.

Tung oil consumption in the United States is stable at about 16,000 tons annually, but domestic production has declined sharply, reaching only 2,500 tons for the past 2 years because of freeze damage followed by hurricane destruction. However, since U.S. tung oil is a price-supported commodity, the Commodity Credit Corporation currently holds the equivalent of more than a year's requirement in stocks and inventory.

The latest CCC selling price, at about 22 cents per pound, is sharply above the 10 cents of October 1968, yet somewhat below the U.S. price support rate of 26.8 cents. Nonetheless, the price difference is still such that synthetic substitutes are making it difficult for tung oil to do more than hold its own in traditional uses. In the United States, this superior drying oil has been used primarily in the manufacture of high-grade water-resistant protective coatings, paints, varnishes, lacquers, electrical insulation, and printing inks.

The smallest and most erratic member of the industrial vegetable oil group is oiticica oil from Brazil. Containing a high percentage of licanic acid, which has some properties like those of the elaeostearic acid found in tung oil, oiticica oil shares the tree-crop sensitivity of tung oil to yield fluctuations, as well as its vulnerability to competition from synthetic substitutes. Production during the decade has varied from 2,000 short tons to 21,000, and exports from 6,000 to 21,000.